

Clean Set of Pending Claims
52643-00350USPT

1. A steam pressure reducing and conditioning valve for passing a superheated steam inflowing from a first port through a pressure reducing section, and supplying a mist of subcooled water and discharging cooled and decompressed vapor from a second port, wherein a nozzle for supplying said mist is provided in the proximity to said pressure reducing section, a flat nozzle injecting said mist in a planar pattern whereby the planar orientation is perpendicular to the direction of steam flows, and it is disposed a predetermined distance from said pressure reducing section.
2. The valve of claim 1, wherein the pressure reducing section has a bottom and a cylindrical form, and the mist pattern is substantially parallel to the bottom of the pressure reducing section.
3. The vapor change valve of claim 1, wherein nozzles for supplying said mist are juxtaposed longitudinally in several stages in the flow direction of steam oriented towards the second port and at least the nozzle disposed at the position nearest to the pressure reducing section is a flat nozzle.
4. (New) A conditioning valve for desuperheating and depressurizing superheated steam, the valve comprising:
 - a pressure reducing section for reducing the pressure of the steam; and
 - a moisture jet section downstream of the pressure reducing section, wherein the moisture jet section comprises:
 - one or more flat nozzles for injecting one or more respective planar patterns of water into a flow of the steam exiting the pressure reducing section.
5. (New) The valve of Claim 4, wherein at least one of the one or more flat nozzles are positioned upstream of an upstream-most position at which a conical pattern forming nozzle can be positioned without injecting a conical pattern of water that impacts the pressure reducing section.

6. (New) The valve of Claim 4, wherein the one or more flat nozzles are oriented to inject the planar patterns of water perpendicular to the flow of steam.
7. (New) The valve of Claim 6, wherein the one or more flat nozzles are positioned annular about the moisture jet section.
8. (New) The valve of Claim 4, comprising a plurality of nozzles spaced longitudinally in stages downstream from the one or more flat nozzles.
9. (New) The valve of Claim 8, wherein the plurality of nozzles comprises groups of nozzles in the stages.
10. (New) A conditioning valve for desuperheating and depressuring superheated steam, the valve comprising:
 - a pressure reducing section comprising:
 - a plug having a small-hole section comprising:
 - a cylindrical body having a bottom, a plurality of small holes scattered about the cylindrical body proximate the bottom, wherein steam exits the pressure section in rapid annular flow; and
 - a moisture jet section downstream of the pressure reducing section, the moisture jet section comprising one more flat nozzles for injecting one or more respective planar patterns of water into the flow of steam exiting the pressure reducing section.
11. (New) The valve of Claim 10, wherein the flat nozzles are oriented to inject the planar patterns of water perpendicular to the flow of steam.
12. (New) The valve of Claim 11, wherein the flat nozzles are annularly spaced about the moisture jet section.

13. (New) A method of desuperheating and depressuring superheated steam, the method comprising:

depressuring superheated steam;
transforming the steam into rapid annular flow; and
injecting one or more planar patterns of water into the rapid annular flow.

14. (New) The method of Claim 13, comprising:

positioning nozzle jets for forming the one or more planar patterns of water proximate to structure for depressurizing the steam while avoiding contacting the structure with the planar patterns of water.

15. (New) The method of Claim 14, wherein positioning the nozzles comprises positioning at least one nozzle for forming a planar pattern of water at an upstream position to inject water into the flow while the flow is uniform and rapid and orienting the at least one nozzle to avoid contacting the structure with water from the nozzle.

16. (New) The method of Claim 13, comprising injecting the one or more planar patterns of water from positions spaced annularly about the annular flow of steam.

17. (New) The method of claim 16, comprising injecting the one or more planar patterns of water into the annular flow prior to the flow substantially decreasing in speed or becoming substantially non-uniform.--